

FINAL EXAM PRACTICE TEST

Beginning and Intermediate Algebra by Elayn Martin-Gay, 6th edition

Factor the following polynomials completely:

1. $2x^2 - 5x + 3$

2. $3x^3 - 18x^2 + 15x$

3. $4x^2 - 81$

4. Solve the equation: $x^2 + 3x - 10 = 0$

5. Find the domain of the rational function: $f(x) = \frac{3x+2}{x-7}$

6. Find the product and simplify if possible: $\frac{x^2-49}{x^2-3x-28} \cdot \frac{x+4}{x}$

7. Perform the indicated operation: $\frac{-x+2}{x} - \frac{x-5}{6x}$

8. Solve the equation: $\frac{a}{a-8} = \frac{-6}{a-4}$

9. In 2 minutes, a conveyor belt moves 500 pounds of recyclable aluminum from the delivery truck to a storage area. A smaller belt moves the same quantity of cans the same distance in 9 minutes. If both belts are used, find how long it takes to move the cans to the storage area.

10. Given the function: $f(x) = x^2 - 3x + 1$, find the following function values:

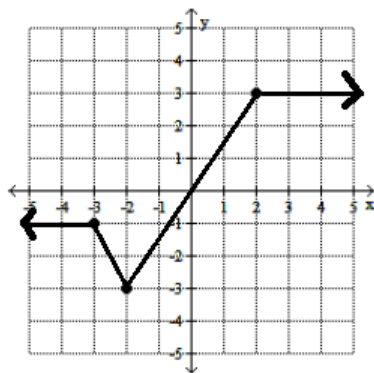
a) $f(3)$

b) $f(0)$

c) $f(-1)$

d) $f(-2)$

11. Use the graph of the function f to find $f(2)$ and $f(-2)$:

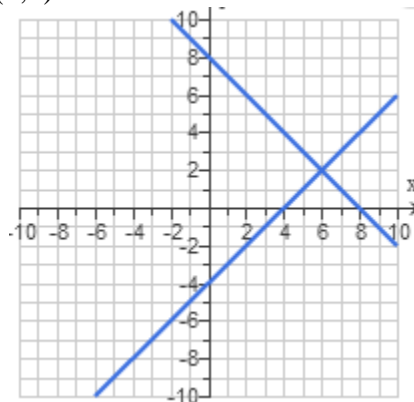


12. Solve the system of equations by the substitution method:
$$\begin{cases} 3x - 7y = 17 \\ y = x - 3 \end{cases}$$

13. Solve the system of equations by the addition method: $\begin{cases} y = 7 + 3x \\ 6x - 2y = -14 \end{cases}$
14. Solve the system of linear equations by graphing: $\begin{cases} x + y = 8 \\ x - y = 4 \end{cases}$
15. Find the equation of the line passing through the given points $(-1, 8)$ and $(0, 3)$. Use function notation to write the equation.
16. If y varies directly as x , find the constant of variation k and the direct variation equation for the situation. $y = 2$ when $x = 12$
17. Solve the absolute value equation $|x - 6| + 2 = 4$
18. Solve the inequality $|x + 8| \geq 13$. Graph the solution. Write the solution using interval notation.
19. Graph the following inequality: $4x + y > 4$
20. Simplify the following radical expressions. Assume that variables represent positive real numbers. $\sqrt[3]{-8x^{15}}$
21. Use the quotient rule to simplify: $\sqrt{\frac{5x^4}{16y^2}}$
22. Subtract the following radicals: $6\sqrt{75} - 2\sqrt{20} - 2\sqrt{27}$
23. Solve the radical equation: $\sqrt{4x - 7} - 1 = 4$
24. Solve the radical equation: $\sqrt[3]{3x} = 3$
25. Add and write answer in $a+bi$ form: $(8 - 4i) + (8 + 3i)$
26. Subtract and write answer in $a+bi$ form: $(7 - 4i) - (8 - 3i)$
27. Multiply and write answer in $a+bi$ form: $(3 - 2i)^2$
28. Multiply and write answer in $a+bi$ form: $3i(5 - 8i)$
29. Solve using the quadratic formula: $x^2 - x - 1 = 0$
30. Solve using the quadratic formula: $x^2 + 6x + 13 = 0$

Answers

1. $(2x - 3)(x - 1)$
2. $3x(x - 1)(x - 5)$
3. $(2x + 9)(2x - 9)$
4. $x = -5, 2$
5. $(-\infty, 7) \cup (7, \infty)$
6. $\frac{x+7}{x}$
7. $-\frac{7x-17}{6x}$
8. $a = 6, -8$
9. $1\frac{7}{11}\text{min}$
10. $f(3) = 1; f(0) = 1; f(-1) = 5; f(-2) = 11$
11. $f(2) = 3; f(-2) = -3$
12. $(1, -2)$
13. Infinitely many solutions
14. $(6, 2)$

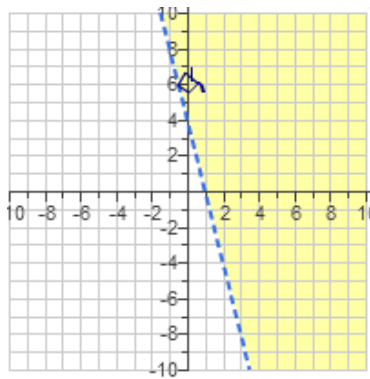


15. $f(x) = -5x + 3$
16. $k = \frac{1}{6}; y = \frac{1}{6}x$
17. $\{4, 8\}$

18. $(-\infty, -21] \cup [5, \infty)$



19.



20. $-2x^5$

21. $\frac{x^2\sqrt{5}}{4y}$

22. $24\sqrt{3} - 4\sqrt{5}$

23. $x = 8$

24. $x = 9$

25. $16 - i$

26. $-1 - i$

27. $5 - 12i$

28. $24 + 15i$

29. $\frac{1 \pm \sqrt{5}}{2}$

30. $-3 \pm 2i$